Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 11/20/2018 at 9:00 a.m.

Objective: Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found at: http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html.

CDFW: Bob Fujimura, Kyle Griffiths, Ken Kundargi, Duane Linander, Jason Julienne
DWR: Kevin Reece, Bryant Giorgi
NMFS: Jeff Stuart, Kristin McCleery
Reclamation: Tom Patton, Elissa Buttermore
SWRCB: Chris Carr
USFWS: Craig Anderson, Felipe Carrillo

Agenda Items

1. Agenda review and introductions
2. RPA Implementation review (For the DOSS Dashboard, click on the "Triggers & Indices" tab at: www.baydeltalive.com/djfmp)
3. Current Operations
4. Smelt Working Group
5. Fish Monitoring: Salvage
6. Fish Monitoring: RSTs/trawls/seines
7. Late-fall Hatchery releases-yearling spring-run surrogates
8. DOSS Estimates of Fish Distribution
9. DOSS advice
10. Next DOSS meeting

Agenda Item 2.
RPA Implementation Review

Delta RPA Actions affecting operations during November:

Action IV.1.1 (Alerts that indicate the Delta Cross Channel (DCC) gate operations may be triggered soon)[1]:

- Since October 2014, NMFS has used an environmental surrogate to indicate the tributary flow conditions that stimulate movement of yearling-sized spring-run Chinook salmon out of their natal tributaries. Tributary flow increases are used to signal conditions conducive to emigration. Starting on 10/1, the First Alert is triggered if either the first component (>95 cfs flow threshold) or second component (>50% change in mean daily

[1] For details, see pages 60-61 in Enclosure 2 of the 2011 Amendments to the 2009 RPA document at: http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf. Note that in October 2014, NMFS approved a modification of the first component of the first alert to a 95 cfs mean daily flow threshold in either Mill Creek or Deer Creek in lieu of operating the Mill and Deer Creek rotary screw traps.

flow) has been exceeded at either the Deer Creek gage at Vina (DCV), or the Mill Creek gage at Los Molinos (MLM). Over the past week (11/13/18-11/19/18), the First Alert was triggered every day based on Mill Creek and Deer Creek flows greater than 95 cfs. Summer baseline flows at Mill Creek have been greater than the first component trigger of 95 cfs all summer long, thus making this trigger less relevant this water year.

	Mill Creek (MLM)		Deer Creek (DCV)	
Date	mean daily flow (cfs)	change in mean daily flow	mean daily flow (cfs)	change in mean daily flow
11/13/2018	104	1%	96.4	0%
11/14/2018	104	0%	97.1	1%
11/15/2018	105	1%	97.7	1%
11/16/2018	104	-1%	98.3	1%
11/17/2018	105	1%	98.7	0%
11/18/2018	104	-1%	98.5	0%
11/19/2018	104	0%	98.3	0%

- Second Alert (triggered only if **both** Knights Landing water temperatures are less than 56.3°F and Wilkins Slough flows are >7,500 cfs). Recent conditions for:
    - Wilkins Slough flow: 3,395 cfs – 4,240 cfs (range of mean daily flow for the period 11/13/18 through 11/19/18)
    - Knights Landing water temperature: 49.7°F – 50.3°F (temperatures reported at the rotary screw traps for the period 11/13/18 through 11/15/18)
    - The second alert has not yet been triggered in WY 2019.

Action IV.1.2[2] (DCC gate operations):

- Since 10/1/18, none of the criteria requiring DCC gate closure have been met.

Agenda Item 3.

Current Operations (11/20/18)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	1,500	Jones Pumping Plant	1,800 (2 units)
Reservoir Releases (cfs)			
Feather - Oroville	1,750	American - Nimbus	1,800
		Sacramento - Keswick	4,500*
		Stanislaus - Goodwin	200
		Trinity - Lewiston	300
Reservoir Storage (in TAF)			
San Luis (SWP)	750	San Luis (CVP)	431**

[2] For details, see pages 62-66 in Enclosure 2 of the 2011 Amendments to the 2009 RPA document at: http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf

Oroville	1,045	Shasta	2,143
New Melones	1,749	Folsom	342
Delta Operations			
DCC	Closed***	Sacramento River at Freeport (cfs)	8,320
Outflow Index (cfs)	~4,850	San Joaquin River at Vernalis (cfs)	1,120
E:I	30% (3-day avg.)	X2	>81 km

* Keswick releases are scheduled to decrease late next week for the conservation of water.
** San Luis Reservoir continues to be drawn down due to reduced exports and continued demand for water due to dry conditions.
*** The DCC gates closed yesterday (11/19), will open Wednesday (11/21) at 10 am and will remain open for the Thanksgiving holiday for the benefit of recreational boaters. DCC gates will close the following Monday (11/26) at 10 am will likely remain closed until late May 2019.

Factors controlling Delta exports:

- 11/13-11/20: Delta outflow requirements, likely to be controlled by salinity standards in the near future unless river inflows increase substantially.

Approximate OMRs as of 11/16/18:

	USGS gauges (cfs)	Index (cfs)
Daily	-2,200	-2,400
5-day	-2,400	-2,400
14-day	-3,900	-3,500

Approximate OMR as of 11/19/18:

	Index (cfs)
Daily	-2,600
5-day	-2,400
14-day	-2,900

Weather Forecast

The outlook for the Sacramento region for the next week is continued dry and smoky conditions today, with rain encompassing all of northern California tomorrow afternoon and evening. Snow levels are expected at 6,000 feet in the Sierras. Breezy conditions expected Thursday afternoon and evening. Periods of moderate to heavy rain with the heaviest expected Thursday night into early Friday for areas north of Interstate-80. Newly burned areas are expected to see ash flow from moderate rain. Flash flood warnings in effect for areas affected by fires. Drier weather expected by Saturday afternoon.

Agenda Item 4.

Smelt Working Group

The Smelt Working Group (SWG) has not yet started meeting for WY 2019. The SWG will likely start meeting in late November or early December.

Agenda Item 5.

Fish Monitoring: Salvage

Fujimura (CDFW) provided a salvage summary. No salmonids or green sturgeon have been salvaged at the SWP and CVP fish facilities since the beginning of WY19 (10/1/18), and no salmonids or green sturgeon have been salvaged since last June. Of note over the past week at the fish salvage facilities:

- On 11/14 staff performed predator removal treatment using CO_2 in the secondary channel. 87 predatory fish were collected out a total of 232 fish. Of these predatory fish, they were mostly white or channel catfish. Few striped bass were observed.
- Earlier that same day (11/14), the first juvenile white surgeon of this WY was observed in the 0600 hour count. It was 235 mm total length.
- On 11/15 the Tracy Fish Collection Facility salvaged over 50,000 threadfin shad from the 1000 hour count.
- Sunday (11/18) at 12:15 am, one of the secondary Hydrolux screens failed and the Tracy Fish Collection Facility was not operational for 10.5 hours. The Tracy Pumping Plant stopped exports at 12:30 pm. Normal salvage operations and exports resumed at 2:40 pm. This outage was noted on the daily salvage sheets for the Tracy Fish Collection Facility.

DOSS Weekly Salvage Update

Reporting Period: November 12-November 18, 2018

Prepared by Bob Fujimura on November 19, 2018 16:43

Preliminary Results -Subject to Revision

Criteria	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0
Wild steelhead	0	0	0	0	0	0	0	→	0
Exports									
SWP daily export	1,661	1,233	1,021	1,448	1,661	2,041	1,931	↘	1,571
CVP daily export	5,131	5,124	3,949	3,527	3,527	3,520	3,211	↘	3,998
SWP reduced counts	0%	0%	0%	0%	0%	0%	0%	→	0%
CVP reduced counts	0%	0%	0%	0%	0%	0%	51%	↗	7%

Loss Density = fish lost/TAF; water export = AF; Trend = compared to previous week; wild = adipose fin present

Loss = estimated number of fish lost at the CVP and SWP Delta export facilities based on estimated salvage (see below)

Reduced counts = percentage of time that routine salvage sample time were less than 30 min per 2 hours of salvage and export operations

Tan highlighted date indicates major facility outage; 11/18 TFCF was shutdown for 10.5 hrs due to a secondary screen failure.

Chinook Salmon Weekly/Season Salvage and Loss

Combined salvage and loss for both CVP and SWP fish facilities

Race determined by size at date of capture; hatchery = adipose fin missing;

	Weekly Total			Season Total	
Category	Salvage	Loss	Trend	Salvage	Loss
Wild					
Winter Run	0	0	→	0	0
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	0	0
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
Total	**0**	**0**		**0**	**0**
Hatchery					
Winter Run	0	0	→	0	0
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	0	0
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
Total	**0**	**0**		**0**	**0**

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time

NC = cannot be calculated; hatchery salmon salvage and loss estimates have been corrected using CWT readings when available

Steelhead Weekly/Season Salvage and Loss

Combined salvage and loss for both CVP and SWP fish facilities

	Weekly Total			Season Total	
Category	Salvage	Loss	Trend	Salvage	Loss
Wild	0	0	→	0	0
Hatchery	0	0	→	0	0
Total	**0**	**0**		**0**	**0**

State Water Project loss = salvage x 4.33; Central Valley Project loss = salvage x 0.68

Generated by Bob Fujimura on November 19, 2018

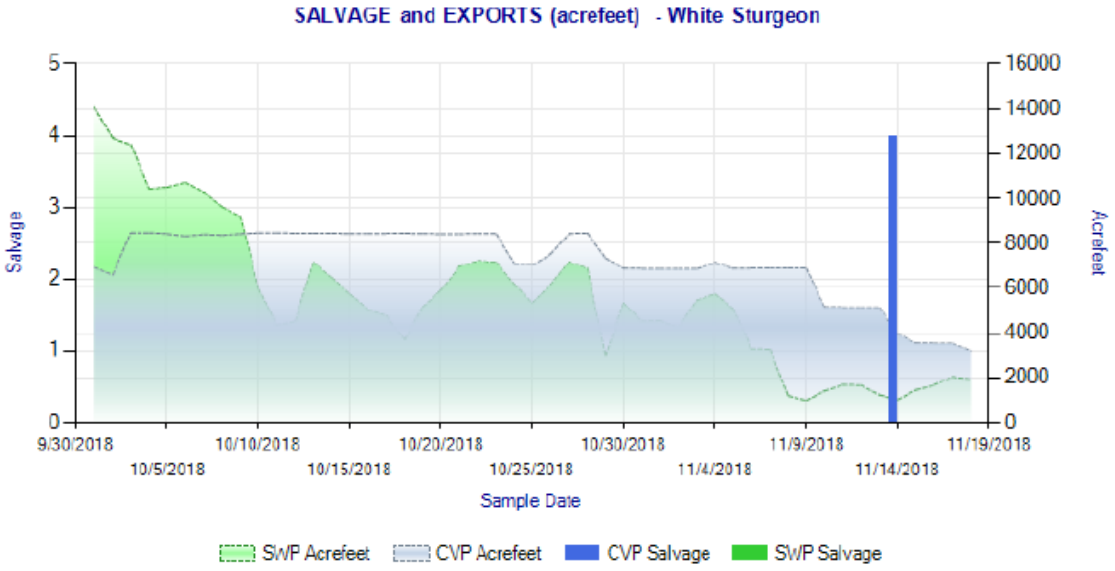


Figure 1. Daily salvage of White Sturgeon and water exports from the state and federal fish salvage facilities during October 1 through November 18, 2018. Graph obtained from the DFG salvage monitoring web-page: https://apps.wildlife.ca.gov/Salvage/

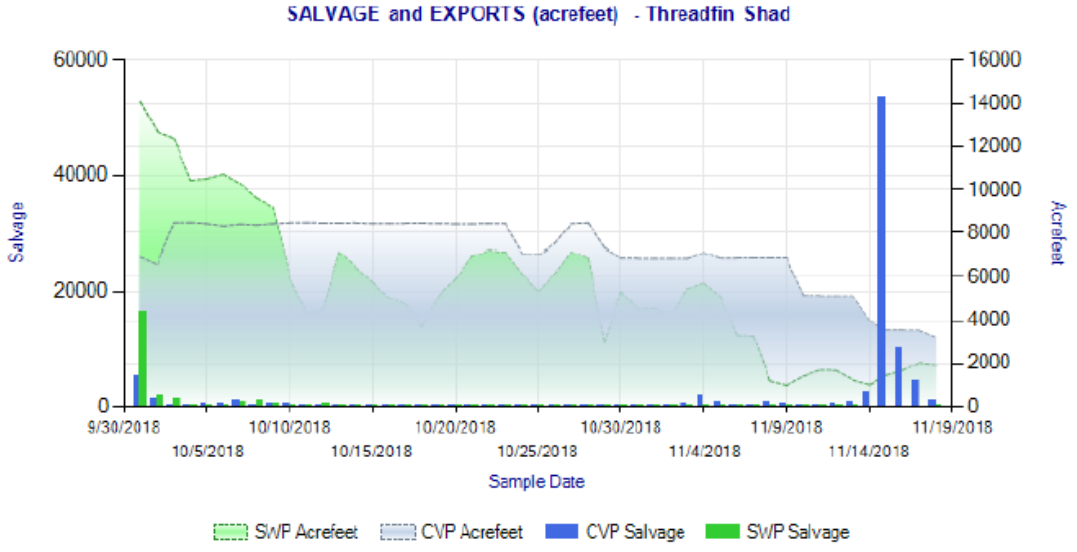


Figure 1. Daily salvage of Threadfin Shad and water exports from the state and federal fish salvage facilities during October 1 through November 18, 2018. Graph obtained from the DFG salvage monitoring web-page: https://apps.wildlife.ca.gov/Salvage/

Agenda Item 6.

Fish Monitoring: The following table presents fish monitoring data summarized over the past week. Unless otherwise noted, reported sizes are fork length. Empty cells indicate zero catches at those locations with sample dates shown.

Location	GCID RST[A]	Tisdale RST[B]	Knights Landing RST[C]	Beach Seines[D]	Sacramento Trawl[D]	Chipps Is. Midwater Trawl[D]	Mossdale Kodiak Trawl[E]
Sample Date	No sampling	11/12-11/15	11/8-11/15	11/13, 11/15	11/13-11/14	11/13-11/14	No sampling
FR Chinook							
SR Chinook							
WR Chinook							
LFR Chinook							
Chinook (ad-clip)							
Steelhead (wild)							
Steelhead (ad-clip)							
Green Sturgeon							
Flows (avg. cfs)		3,676	3,440				
W. Temp. (avg. °F)		49.8	50.9				
Turbidity (avg. NTU)		4.2	4.05				

[A] The GCID RST was raised on 10/6/18, due to an unanticipated spike in turbidity and debris following sporadic rain events concurrent with a high level of mortality of winter-run juveniles in the live box. Monitoring at GCIS has not resumed and to date, there has been no additional information as to when or if monitoring will resume this year.

[B] Tisdale RST sampling period was from 11/12 at 10:30 am to 11/15 at 11:15 am. Sampling did not occur between 11/15 and 11/19. Monitoring will start back up again today (11/20).

[C] Knights Landing RST sampling period was from 11/8 at 11:00 am to 11/15 at 1:00 pm. Sampling did not occur between 11/15 and 11/19. Monitoring will start back up again today.

[D] Data reported in the 11/11 to 11/17 DJFMP sampling summary. Many samples were not conducted last week due to the heavy smoke keeping crews from going out into the field.

[E] No sampling was conducted at Mossdale this past week.

Red Bluff Diversion Dam (RBDD)

USFWS biweekly report (11/5/18-11/18/18) for preliminary estimates of passage by brood-year and run for unmarked juvenile Chinook salmon captured by rotary screw traps at RBDD included:

Run and Species	Biweekly Total	Brood Year Total (90% CI)
Winter-run Chinook (BY2018)	72,082	884,916 (699,730-1,070,101)
Spring-run Chinook (BY2018)	17,762	106,852 (83,791-129,913)

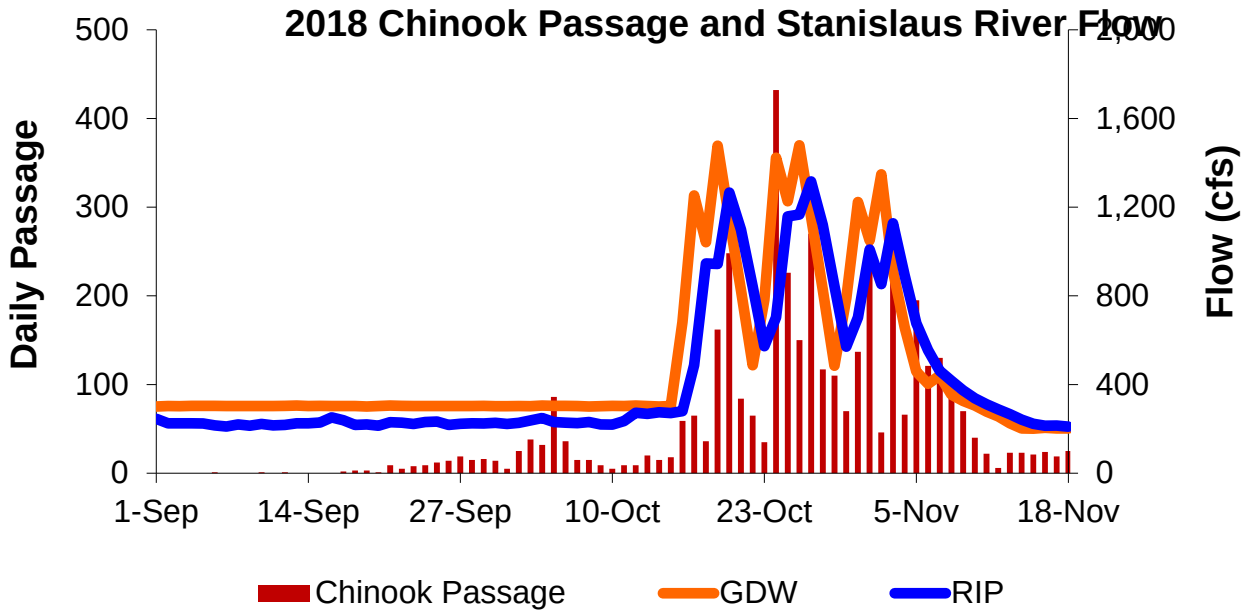
Enhanced Delta Smelt Monitoring (EDSM):
No salmonids were caught in any region of the EDSM sampling. Sampling occurred on 11/14 and 11/15, no sampling from 11/16 to 11/17 due to heavy smoke conditions.

CDFW carcass surveys

- ***San Joaquin River tributaries:*** Chinook salmon carcass surveys, with incidental redd counts, began the week of 10/1/18 on the Merced River, Tuolumne River, and Stanislaus River. CDFW has completed the seventh week of surveys. For the week of 11/12 to 11/16 the following were observed during the surveys: 335 live Chinook salmon, 244 redds, 42 skeletons, 44 carcasses tagged, and 7 ad-clipped carcasses were reported on the Merced River, 34 females were spawned at the Merced River Fish Hatchery; 882 live fish, 749 redds, 56 skeletons, 90 carcasses tagged, and 19 ad-clipped carcasses were reported on the Stanislaus River, and 479 live fish, 266 redds, 20 skeletons, 56 carcasses tagged, and 8 ad-clipped carcasses were reported on the Tuolumne River.

- ***American River:*** Chinook salmon carcass surveys began on Monday, 10/15/18. The survey area includes Nimbus Dam to Watt Avenue. The Nimbus Basin is now closed to all fishing, and Chinook salmon spawning is monitored in this area. The weir was only checked once last week due to poor air quality (normally checked at the beginning and end of each week). From 11/13 to 11/16, 159 total fish were observed between Nimbus Dam and the Fair Oaks Bridge (54 at Nimbus Basin and 90 at the weir). 17 of 63 female carcasses observed were unspawned, 11 were partially spawned, 31 were spawned, and 4 were unknown due to deteriorated condition. Water temperatures in the survey reaches were a mean of 56.5^{o}F at the farthest point upstream at the Hazel Avenue Bridge. New seasonal operations of Nimbus Dam began on 11/1 that typically reduce water temperatures in the downstream reaches below the Hazel Avenue Bridge. The Nimbus Fish Hatchery started spawning fish on 11/2.

Stanislaus River weir
Monitoring at the weir near Riverbank (for upstream passage of adult salmonids) began on 9/5/18. Last week (11/12/18 – 11/18/18); 141 adult fall-run Chinook salmon and 0 *Oncorhynchus mykiss* were observed passing upstream of the weir. The cumulative net upstream passage through 11/19/18 is 4,161 Chinook salmon (25% were ad-clipped, indicating a verifiable hatchery origin; hatcheries ad-clip 25% of their production fall-run Chinook salmon), and 17 *O. mykiss* (data provided by FISHBIO in their 11/19/18 Stanislaus Weir Update). Eleven of the *O. mykiss* passing the weir were greater than 16 inches. Of these 11 fish, 4 were ad-clipped, indicating a hatchery origin and 7 were unclipped, indicating a natural origin. Of the 17 total fish observed,11 were unclipped, indicating that the individual was of natural origin.



Acoustic-tagged green sturgeon
CDFW has acoustic-tagged 29 juvenile sturgeon (28 green sturgeon and 1 white sturgeon) captured between 7/24/18 and 10/31/18 near Sherman Lake on the Sacramento River (western Delta). Fork lengths of these fish range between 42 cm and 94 cm. No updated data were available at the time of the DOSS call.

Other Surveys
The following fish hatchery spawning data are provided to inform DOSS members of potential hatchery influence on catch numbers at monitoring locations. Data from additional hatchery spawning programs and other carcass surveys may be provided in the future as they become available to DOSS.

- **Feather River Fish Hatchery Spawning**
  No updates were provided for this week's DOSS call.

- **Mokelumne River Fish Hatchery**
  No updated were provided for this week's DOSS call.

<u>Agenda Item 7.</u>
Late-fall Hatchery releases-yearling spring-run surrogates
The DOSS group agreed to follow the standard protocol for the timing of releases of the spring surrogate groups of late-fall-run Chinook salmon from the Coleman Nation Fish Hatchery. The first production will be released in early December, the first surrogate release around 3 days after the production release, the second surrogate release in late-December (preceding a precipitation event and at least a week after the previous surrogate release), and the third surrogate release in mid-January (ideally preceding a precipitation event and at least a week after the previous

surrogate release). Should forecasted weather conditions for December indicate continuing dry conditions, the DOSS group will discuss exact release dates in early December.

Agenda Item 8.

DOSS Estimates of Fish Distribution

DOSS estimates of the current distribution of listed Chinook salmon as a percentage of the population, are based on recent monitoring data and historical migration timing patterns.

Location	Yet to Enter Delta (Upstream of Knights Landing)	In the Delta	Exited the Delta (Past Chipps Island)
Young-of-year (YOY) winter-run Chinook salmon	94-98% (last week: 97-99%)	2-6% (last week: 1-3%)	0% (last week: same)

Rationale for distribution

Wild winter-run Chinook:

No additional wild winter-run Chinook salmon were observed at monitoring locations this past week, however, monitoring was limited due to fire conditions (poor air quality), which reduces the likelihood of seeing catch in the RSTs. Therefore, DOSS estimates that an additional 1-3 percent of wild winter-run Chinook salmon may have moved into the Delta over the past week.

Agenda Item 9.

DOSS Advice to WOMT and NMFS:

Notice to NMFS and WOMT that fish migration is likely due to expected storm runoff causing increased river flows and elevated turbidity later this week. Increases in fish presence in the lower river may necessitate DCC gate operations earlier than Monday morning. Reclamation will be on call to see if DCC operations need to be implemented.

Agenda Item 10.

Next Meeting: The next DOSS conference call will be on **11/27/18 at 9am**.